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ABSTRACT

Previous research has established that rural pharmacists are often the first points of contact regarding health care for elders, and are "gatekeepers" for aging-related information. This project established regionally distributed co-operative arrangements with four schools of pharmacy, one state pharmacy association, and one national pharmacy fraternity. In each of the six regions of the country project staff and co-hosts determined profiles of the region's rural elders (personal, health, and socioeconomic characteristics) and of their over-the-counter and prescription drug use in order to orient geropharmacy and gerontology content to the specific needs of the region. Profile-oriented curricula were then taught on-site to pharmacy and health-related faculty; leaders in state, regional, or local pharmacy associations; and selected community pharmacists. Drug usage profiles were found to differ by geographic region, with several explanatory variables. Independent 6-to 7-month follow-up evaluations by a third party showed some significant changes in participants' practices, within both pharmacy education/continuing education and community operations. This project highlights the need to tailor geropharmacy education to the specific characteristics of the elders in the region. (Author/ABL)

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Regional Differences in Medication Profiles: Responding with Geropharmacy Curricula

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Abstract

The current project is the third in a series of research translation projects on geropharmacy supported by the AARP Andrus Foundation. Previous work in Delaware, Maryland, Pennsylvania, Virginia, and West Virginia has established that: rural pharmacists are often first points of contact regarding health care for elders, and are "gatekeepers" for aging-related information; rural pharmacists will participate in and will learn significantly from on-site, 48-hour, multi-disciplinary geropharmacy and gerontology curricula; participants will evidence by cross-tab analysis significant changes in practice on three, six, and seven month follow-ups.

The current project established regionally distributed co-operative arrangements with four schools of pharmacy, one state pharmacy association, and one national pharmacy fraternity. In each of six regions of the country project staff and co-hosts determined profiles of the region's rural elders (personal, health, and SES characteristics) and of their OTC and Rx drug use in order to orient geropharmacy and gerontology content to the specific needs to the region. Profile-oriented curricula were then taught on-site to pharmacy and health-related faculty, leaders in state, regional or local pharmacy associations, and selected community pharmacists. Drug usage profiles were found to differ by geographic region, with several explanatory variables. Independent six to seven month follow-up evaluations by a third party show some significant changes in participants' practices, within both pharmacy education/continuing education and community operations. This project highlights the need to tailor geropharmacy education to the specific characteristics of the elders in the region.

BACKGROUND

This AARP Andrus Foundation project builds upon three previous years (1985-87) of Andrus activity wherein the project team from the Center on Aging and the School of Pharmacy of the University of Maryland "translated" current research on drugs and aging to the needs of practicing rural pharmacists. Earlier research we conducted with the support of the U.S. Department of Interior suggested that rural elders in Maryland tended to rely upon rural pharmacists as their first, and at times only, point of contact with the entire health care system. Interviews conducted during the 1985-87 Andrus projects with rural elders, their families and community-based service providers in Delaware, Maryland, Pennsylvania, Virginia, and West Virginia, while not systematic, reinforced the finding.

In addition, during the 1985-87 projects our project team interviewed over 400 rural community pharmacists (290 of whom subsequently participated in our research translation curriculum) and learned that approximately half of the time that these pharmacists spend in professional interaction with rural elders or their families is devoted to drug compliance (dosage, monitoring for side effects, interactions, etc.), and the other half is spent on aging-related community resources (home health, respite, day care services, etc.). In practice, the pharmacist's discussion of the former allows for appropriate management of chronic conditions that elders may experience; discussion of the latter helps to allow these elders to remain in the community, independent for as long as possible.

Program Content

And so, our two previous Andrus projects (1985-87) focused upon delivering on-site in rural communities in Delaware, Maryland, Pennsylvania, Virginia, and West Virginia a fairly comprehensive geropharmacy and gerontology curriculum that responded to the rural pharmacists' dual needs of recent research on drugs and aging, and recent developments in appropriate, aging-related community resources.

In each state our project team interviewed dozens of rural pharmacists regarding their practices, their knowledge of geropharmacy and gerontology, their interests in participating in our research translation curriculum, and their preferences for meeting times and places.

The on-site curriculum content in these two previous research translation projects varied by pharmacists's needs, but always contained a 48-hour program (32 hours contact, 16 hours individual reading) with the following:

- recent developments in drugs for elders
- drug-drug, drug-food, drug-disease interactions with age
- nutritional needs in growing older
- the patient-at-risk
- demographics of aging in America
- psychosocial issues in growing older
- the environmental press model, the person-environment fit
- the older consumer
- marketing pharmacy services to elders
- aging-related community services the pharmacists should know about
- principles of pharmacotherapy

- pharmacokinetics and pharmacodynamics in the older person
- drug regimen review
- helping elders toward self-health responsibility

Program Format and Evaluation

Our multi-disciplinary project team conducted these curriculum programs as either (a) eight four-hour sessions, once a week for eight consecutive weeks (e.g., Tuesdays from 7-11pm); (b) eight four-hour sessions, once a month for eight consecutive months (e.g., first Wednesday of the month from 7-11pm); or (c) eight four-hour sessions distributed into two non-consecutive weekends (e.g., Saturday - Sunday, Saturday - Sunday, 8am - 5pm). At the beginning and end of each entire program participating rural pharmacists took two cognitive pre-tests and post-tests, the first a 25 item, project team-constructed test on pharmacy, gerontology, nutrition, and marketing; the second Palmore's Facts on Aging quiz. As well, 6-7 months after their participation, an independent research center surveyed pharmacists with an 88-item instrument to determine changes in pharmacy practice. Results in both of the previous projects were gratifying: statistically significant cognitive gains from pre- to post- tests, and increased likelihood of making changes in pharmacy practice (e.g., instituting formal drug regimen reviews, referrals to aging agencies, etc.) the more sessions the pharmacists attended. Thus, the research translation program demonstrably affected both knowledge and practice.

THE CURRENT PROJECT

Responsibilities

In order to broaden the impact of this project, we contracted with leaders in pharmacy education and practice across the United States, taking care to identify leadership organizations in several geographic regions of the United States. These organizations would serve as co-sponsors of the program with several responsibilities: (1) convening Regional Planning Committees, comprised of pharmacy association leaders, pharmacy and health-related educators, and practicing pharmacists; (2) activating these committees in order to gain, through nominal group process technique, consensus regarding the characteristics of the region's rural elders and their prescription and over-the-counter medication profiles; (3) identifying specific geropharmacy and gerontology curriculum content that would respond to the elders' characteristics and profiles; (4) assisting the University of Maryland project team as instructors in delivering a regional program; (5) reaching out to other association leaders, academic faculty members, and practicing pharmacists to invite their participation in a regional program; (6) co-hosting a regional program; (7) providing the independent survey research center with names and telephone numbers of participants in the regional program for possible inclusion in 6-7 month follow-up surveys; (8) administering continuing education credits, as needed, for participants; and (9) coordinating "next-step" activities in the region, e.g., the development of a continuing institute on geriatric pharmacy.

The responsibilities of the project team included (1) participating in each co-sponsor's Regional Planning Committee meetings and supervising the nominal group process techniques; (2) collaborating with each co-sponsor to identify instructional

faculty for each regional program; (3) co-sponsoring and co-teaching each regional program; (4) constructing cognitive pre-post tests tailored to the specific program content of each regional program; (5) administering and collecting cognitive pre-post tests in each regional program; (6) obtaining participant information for survey research center follow-up; (7) consulting with co-sponsors as needed on relevant subsequent activities that would capitalize on interests and needs related to geropharmacy and gerontology.

Co-Sponsors

This project worked successfully with the following organizations as co-sponsors:

New England	Massachusetts College of Pharmacy and Allied Health Sciences. Boston, Massachusetts
Southeast	University of Florida College of Pharmacy, Gainesville, Florida
Deep South	Samford University School of Pharmacy, Birmingham, Alabama
Midwest	University of Missouri - Kansas City School of Pharmacy, and University of Missouri - Kansas City Center on Rural Elderly, Kansas City, Missouri
Northwest	Washington State Pharmacists Association, Renton, Washington, and The Northwest Geriatric Education Center, University of Washington
National	Lambda Kappa Sigma, National Pharmacy Fraternity, Las Vegas, Nevada

Results by Region

Each of the four university-based co-sponsors and the one state association co-sponsor convened a Regional Planning Committee of pharmacy association leaders,

educators, and practicing rural pharmacists. Committee size ranged from 9 to 21 members, and was usually multi-state. This committee determined by repeated nominal group process technique the characteristics and medication profiles of rural elders in the region and suggested curriculum content for a regional program that would address these characteristics and profiles. The results of the several Regional Planning Committees' efforts are shown in Tables 1-5, with committee scores noted in parentheses.

As can be seen from Tables 1-5, there are both similarities and differences by region in the profiles of rural elders and their medications. Some of the important findings include:

Characteristics of Rural Elders

(1) Multiple ailments, for which elders are taking multiple medications, is the primary characteristic of rural elders in three of the five regions, with this characteristic being implied in a fourth region.

(2) Concern for health care costs or having a limited income appear among the top three characteristics in four of the five regions.

(3) The remainder of the cluster of characteristics of rural elders varies notably from region to region. For example, rural elders in one region are seen as eager to seek information; those in a second are described as unwilling to be open; those in a third as emotionally dependent on the pharmacist.

Most Frequent Prescription and Over-the-Counter Medications

(1) Antihypertensives are ranked first in four of the five regions, and are tied for first in the fifth region.

(2) Analgesics are ranked among the top three medications in three regions.

(3) Non-steroidal anti-inflammatory drugs (NSAIDs) are ranked second, third, and fourth in three of the five regions.

(4) Laxatives, often incorrectly considered by the public to be innocuous, appear among the top five medications in all five regions.

(5) While the same medications appear at or near the top of each region's list (i.e., cardiovascular/antihypertensives, and analgesics), there are notable variations in the rest of the medication profile cluster by region. For example, laxatives ranked next most frequently used in both southern regions, but were last or tied for last elsewhere; use of non-steroidals varied by region; frequent use of vitamins is noted in the Southeast (Florida).

(6) Variations in medication profiles may well reflect economic, social, ethnic, and dietary differences among the region's elders. These may also reflect differences in the medical and pharmacological education of prescribers in the region.

Profile - Related Curriculum Content

(1) Hypertension among elders was seen as a primary topic for research translation, and so it was addressed in all of the regional programs, as well as in the Lambda Kappa Sigma (LKS) seminar and programs.

(2) Over-the-Counter medications were addressed in all of the programs. (OTCs pose a significant challenge to the pharmacist committed to a comprehensive drug regimen review, because more medications are becoming available without prescription, thereby frustrating effective monitoring by the pharmacist, and elders often incorrectly assume that OTCs are harmless.)

(3) "Aging-related community resources" was a module in two regional programs and the LKS seminar and programs.

(4) Despite regional variations among the profiles of their elderly patients, rural pharmacists in all five regions expressed a need to learn more about certain cross-cutting issues: improving communication with elders and their families, and with physicians; identifying who among the hundreds of patients they see each day are elders-at-risk.

Regional Programs

Guided by the results of the Regional Planning Committees noted above, the project and its several co-sponsors conducted regional programs on geropharmacy and gerontology during 1988 and 1989. Overall, some 400 professionals participated. As can be seen from the brochures, the curriculum content of each regional program was meant to address the specific profiles of rural elders in the region and the needs for information of the practicing pharmacists in the region. Therefore, the regional

programs vary from one to another, with not only differences in emphases but also inclusion or omission of certain subject matter. As well, some cross-cutting issues like improving communication and targeting drug regimen reviews are features of all of the programs.

In the case of Lambda Kappa Sigma (LKS), the national pharmacy fraternity, the project team hosted a three day, 19-contact hour seminar at the University of Maryland School of Pharmacy for nine LKS leaders drawn from each of LKS's three regions in the United States. The seminar addressed not only content issues in geropharmacy and gerontology but also outreach strategies, on-site program methodologies for rural practitioners, and other activities that would enable the organization to undertake an on-ongoing rural geropharmacy initiative.

The LKS leaders then undertook the responsibility for developing and teaching three one- or two- day geropharmacy and gerontology programs, holding one in each of LKS's three regions of the United States, i.e., Anaheim, California for the West Region, St. Louis, Missouri for the Central, and Cherry Hill - Philadelphia for the East. Some 200 professionals participated overall. An omnibus LKS brochure is attached.

Follow-up Survey

As of November, 1989, only one of the 6-7 month follow-up surveys has been conducted by the independent third party. Some 68 pharmacy educators, association leaders, and community pharmacists who had participated in the New England Regional Program took part. Results show some significant changes in both pharmacy practice and pharmacy education/continuing education; for example, substantial percentages of practitioners now monitoring their older patients according to the project's at-risk

profile, now altering their advice on mega-vitamin supplementation, and increasing their attempts to monitor OTC drug usage by elders; and some educators and association leaders having initiated a geropharmacy module or continuing education program.

Follow-up surveys of participants in the Northwest Regional Program are scheduled for early 1990, and of participants in the Midwest Regional Program for Spring 1990.

The project team anticipates that the current effort will result in broader dissemination of drugs and aging-related education, and in some meaningful changes in pharmacy education and practice. Already our project team is working with faculty members at the Massachusetts College of Pharmacy to help develop an on-going institute in geriatric pharmacy at MCP.

TABLE 1

Characteristics of Rural Elders in New England
As Perceived by Community Pharmacists, Association Leaders, and Educators

Massachusetts College of Pharmacy and
Allied Health Services
Boston, Massachusetts
Regional Planning Committee: 21 members, June, 1988

Characteristics of Rural Elders

(1) tend to have multiple ailments, often chronic and concurrent
(2) are concerned about income and costs, having a mid-to-low economic status and perceiving drugs to be too costly
(3) are confused about how to take medications properly
(4) are single (widowed, divorced, separated or never married), and living alone

Most Frequent Prescription and Over-the-Counter Medications

(1) cardiovascular/antihypertensives
(2.5) analgesics
tie
antisecretories
(4) laxatives/antacids
(5) far less frequently used were a range of drugs from vitamins to non-steroidals and hypnotics.

Profile - Related Needed Curriculum Content

(1) drug-drug, and drug-food interactions with older patients
(2) communication with older patients
(3.5) issues in drugs and aging (e.g., pharmacodynamics, pharmacokinetics, compliance, cost, etc.)
tie
age-related altered drug actions
(5.5) generics
tie
identifying the patient-at-risk
(7) nutrition in growing older
(8) psychosocial issues in aging (broad developments surrounding aging, changes in family life and support, important aging-related community resources the pharmacist should know about, etc.)
(9) recent developments in drugs for elders

TABLE 2

Characteristics of Rural Elders in the Southeast
As Perceived by Community Pharmacists, Association Leaders, and Educators

University of Florida
Gainesville, Florida
Regional Planning Committee: 14 Members, November, 1988

Characteristics of Rural Elders

(1) tend to have multiple chronic medical problems (14)
(2) have limited incomes (12)
(3) are unwilling to be open with health care providers (pharmacists and physicians) (7)
(5) are female (6)
tie
are ignorant of the workings of the health care system (6)
tie
are uneducated (6)
tie
are proud, independent, reluctant to ask questions. (14)

Most Frequent Prescription and Over-the-Counter Medications

(1) cardiovasculars and antihypertensives (21)
(2) analgesics (12)
(3) laxatives (8)
(4) vitamins (6)
(5) NSAIDs (4)

Profile - Related Needed Curriculum Content

(1) preventing/monitoring multiple drug use (16)
(2) barriers to communication; communication between patient and pharmacist/physician, between pharmacist and physician (14)
(3.5) non-compliant patient identification and strategies for intervention (8)
tie
over-view of major Prescription and Over-the-Counter medications used by the elderly (8)
(5) adverse drug reactions with age (6)
(6) pharmacodynamics and pharmacokinetics of aging (5)

TABLE 3

Characteristics of Rural Elders in the Deep South
As Perceived by Community Pharmacists, Association Leaders, and Educators

Samford University
Birmingham, Alabama
Regional Planning Committee: 15 Members, October, 1988

Characteristics of Rural Elders

(1) tend to have high health needs and are taking multiple prescriptions (19)
(2) have a strong need for information (9)
(3) are poor (5)
(5) are a highly diverse population, in income, education, health, ethnic and racial backgrounds, etc. (4)
tie
are medically and pharmaceutically underserved (4)
tie
are proud, independent, reluctant to ask questions. (4)

Most Frequent Prescription and Over-the-Counter Medications

(1) antihypertensives/cardiovasculars (18)
(2) NSAIDs (14)
(3) laxatives (8)
(4) diuretics (6)
(5) anti-diabetes drugs (4)

Profile - Related Needed Curriculum Content

(1) pharmacotherapy knowledge, including how to conduct a drug regimen review, adverse drug reaction, dosage consideration, and drug interactions (19)
(2) self-care for the older patient, including Over-the-Counter medications, good nutrition practices, wellness emphases, aids and devices (17)
(3) communication practices, including how to communicate more effectively with elders individually and in groups, and with health care providers (14)
(4) aging-related community-based resources, including social services, Area Agencies on Aging and home health care (6)
(5) economics of health care (5)

TABLE 4

Characteristics of Rural Elders in the Midwest
As Perceived by Community Pharmacists, Association Leaders, and Educators

University of Missouri
Kansas City, Missouri
Regional Planning Committee: 12 Members, March, 1989

Characteristics of Rural Elders

(1) tend to have multiple illnesses, be ignorant of medications, ask questions about drug interactions (23)
(2) have small town orientation and values: religious, conservative, honest, frugal, and non-aggressive (19)
(3) have need for consistency, are reluctant to change (8)
(4) are less involved in preventive medicine (7)
(5) frequently self-medicate (4)

Most Frequent Prescription and Over-the-Counter Medications

(1) antihypertensives (20)
(2) cardiovasculars/digitalis (13)
(3) NSAIDs (10)
(4) diuretics (8)
(5) laxatives (6)

Profile - Related Needed Curriculum Content

(1) drug regimen review (13)
(2) identifying drug risks in elders, drug-induced illnesses and death (10)
(3) principles of communicating with prescribers, elders, and staffs (9)
(4) making physicians aware of cost of drugs, addressing patient's concern for cost, cost/benefit judgments (8)
(5) resolving compliance problems (7)

TABLE 5

Characteristics of Rural Elders in the Northwest
As Perceived by Community Pharmacists, Association Leaders, and Educators

Washington State Pharmacists Association
Yakima, Washington
Regional Planning Committee: 9 Members, October, 1988

Characteristics of Rural Elders

(1.5) tend to be independent, self-reliant, of "pioneer spirit, " and neighborly feeling (14)
tie
come to the pharmacists first with their complaints, want value for their health care dollar, are financially strapped, and concerned about medical care costs (14)
(3) lack support systems (5)
(4.5) are isolated, left-behind, emotionally dependent upon the pharmacist (3)
tie
have compliance problems, resisting a return to the physician for clarifications and questions (3)

Most Frequent Prescription and Over-the-Counter Medications

(1.5) analgesics (18)
tie
diuretics and antihypertensives (18)
(3) cardiac medications (5)
(4) laxatives/bowel control medications (3)

Profile - Related Needed Curriculum Content

(1) understanding and communicating with elders and with physicians (13)
(2) demographics of aging and marketing to older patients with family focus (11)
(3) pharmacotherapeutics, including appropriate drug company selection and dosages for elderly adults (7)
(4.5) drug-use, drug-food, drug-disease interactions (4)
tie
aging-related community resources (4)
(7) diseases of aging, including Alzheimer's (3)
tie
involving the older patient in self-care (3)
tie
developing consultant pharmacist role. (3)

TABLE 6

COMPOSITE OF
REGIONAL MEDICATION PROFILES

New England	Southeast	Deep South	Midwest	Northwest
1. antihypertensives/cardiovasculars	1. antihypertensives/cardiovasculars	1. antihypertensives/cardiovasculars	1. antihypertensives	1.5 analgesics and antihypertensives/diuretics
2.5 analgesics and antisecretories	2. analgesics	2. NSAIDs	2. cardiovasculars/digitalis	
	3. laxatives	3. laxatives	3. NSAIDs	3. cardiac medications
4. laxatives/antacids	4. vitamins	4. diuretics	4. diuretics	4. laxatives/bowel control medications
	5. NSAIDs	5. anti-diabetes drugs	5. laxatives	